

# **EXHIBIT E**

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**Subject:** RE: [EXTERNAL] Lead Cable Investigations - Draft Report for Review  
**Attachments:** MTS\_EDF Lead Cable Investigation\_Final Draft TN.docx

Monique, belated thanks for the draft. I am slowing working my way through the text.

While I will be traveling to California (LA and SF) this weekend and next week, I will continue working on it. I thought I would share my edits so far. See attached.

Tom

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**Sent:** Monday, June 5, 2023 10:30 AM  
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**Subject:** [EXTERNAL] Lead Cable Investigations - Draft Report for Review

Good Morning,

I've attached a draft report to review for our Lead Cable Investigations. It's a basic summary of what MTS did. We left it in word format so that you can make comments and track changes on things as needed. We will address any questions or concerns right away.

The file is quite large and may take some time to download.

Thank you for your patience as we pulled all of this information together.

 [Lead Cable Investigation - Client Files](#)

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## Lead Cable Investigation

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June 01, 2023

**Prepared for:**

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## CONTENTS

FIGURES .....	iv
TABLES .....	vi
INTRODUCTION .....	1
METHODS .....	1
Water Sample Collection Methods .....	3
Diver Methods .....	3
Surface Collection Methods.....	43
Sediment Collection Methods.....	4
Cable and Lead Collection Methods.....	4
RESULTS .....	5
South Region.....	5
Louisiana.....	5
Bayou Lafourche.....	5
Bayou Teche .....	6
Mississippi River .....	6
Analytical Results by Sample .....	6
State Summary & Recommendations .....	7
Midwest Region.....	15
Michigan .....	15
Black River, Lake Huron (Saginaw River) and, St. Clair River.....	15
Lake Michigan (Lake Charlevoix) and Straits of Mackinac.....	15
Detroit River .....	16
Analytical Results .....	16
State Summary & Recommendations .....	16
West Region.....	20
Oregon.....	20
Columbia River.....	20
Willamette River.....	20
Analytical Results .....	21
State Summary & Recommendations .....	21

Idaho Data.....	25
Clearwater River and Snake River.....	25
Lake Pend Oreille .....	25
Analytical Results .....	25
State Summary & Recommendations .....	25
Pennsylvania Data.....	29
Allegheny River, Ohio River, and Monongahela River .....	29
California Township (Coal Center) .....	29
Analytical Results by Sample .....	30
State Summary & Recommendations .....	30
West Virginia Data .....	33
Kanawha River.....	33
Analytical Results by Sample .....	33
State Summary & Recommendations .....	33
New Jersey Data .....	36
Hackensack River .....	36
Passaic River.....	36
South Kearny Area.....	37
Analytical Results by Sample .....	37
State Summary & Recommendations .....	37
New York Data .....	44
Highland Falls Township .....	44
Hudson River and Palisades.....	44
Newburgh and New Windsor Township.....	<del>44</del> 47
Palisades Neighborhood -Washington Square Road and Hudson River .....	<del>45</del> 47
Wappingers Falls Township .....	<del>45</del> 47
Analytical Results by Sample .....	<del>45</del> 47
State Summary & Recommendations .....	<del>45</del> 47
California Data.....	<del>51</del> 53
Lake Tahoe.....	<del>51</del> 53
Emerald Bay.....	<del>51</del> 53
Analytical Results by Sample .....	<del>51</del> 53
State Summary & Recommendations .....	<del>51</del> 53
DISCUSSION .....	<del>56</del> 58

## REFERENCES ..... 5658

## FIGURES

Figure 1. Overview map of priority states based on historical permit data collected by the Wall Street Journal. ....	2
Figure 2. Photos. Louisiana. (A) Point of interest BT 1.1. (B) Point of Interest BT 16.2. (C) Point of Interest BT 17.1. (D) Point of Interest BT 24.1. ....	9
Figure 3. Photos. Louisiana continued. (E) Point of Interest: BT 24.1. (F) Point of Interest: BT 26.5.....	10
Figure 4. Photos. Louisiana continued. (G) Point of Interest: MISS 2.1. (H) Point of Interest: MISS 3.1. ....	11
Figure 5. Photos. Louisiana continued. (I-J) Point of Interest: MISS 3.....	12
Figure 6 Photos. Louisiana continued. (K) Point of Interest: MISS 12.1. (L) Point of Interest: MISS 12.1. ....	13
Figure 7 Photos. Louisiana continued. Damaged and abandoned leaded splice box and collection of five leaded cables. MISS 12.3. June 2022, Donaldsonville, Louisiana.....	14
Figure 8 Photos. Michigan. Paint Markings indicating an AT&T service corridor. The leaded air test line follows these markings along the brick building shown above. July 2022, Bay City, MI. ....	18
Figure 9 Photos. Michigan continued. (A-B) Point of Interest: DR 1. (C) Point of Interest: DR 2. ....	19
Figure 10. Photos. Oregon. (A) Point of Interest: WR 1. (B) Point of Interest: WR 2.2. (C) Point of Interest: WR 2.2. (D) Point of Interest: WR 3. ....	23
Figure 11. Photos. Oregon continued. (E) Point of Interest: WR 6. (F) Point of Interest: WR 7. (G) Point of Interest: WR 8. (H) Point of Interest: WR 8.....	24
Figure 12. Photos. Idaho. (A) Lake Pend Oreille Railroad Bridge. (C-D) Point of Interest: LP 4.1.....	27
Figure 13. Photos. Idaho continued. (E-G) Point of Interest: LP4.1 .....	28
Figure 14. Photos. Pennsylvania. Points along the Overhead leaded telecommunications cables that runs approximately 0.9 miles through California Township and Coal Center, PA. CT 6, CT 8, CT 11 (February 2023), and CT 12. October 2022. California Township and Coal Center.....	32
Figure 15. Photos. West Virginia. Site for the Old Pliny Ferry Crossing at Frasier's Bottom. Two bare leaded cables were observed at the end of Ferry Lane. KR 1.3. October 2022, Pliny, West Virginia.....	35
Figure 16. Photos. New Jersey. (A-D) Cable locations near Lincoln Park Wetlands & Nature Trail. Hackensack 2. January 2023, West Side, New Jersey. ....	39
Figure 17. Photos. New Jersey continued. Largely abandoned area around the Meadowlands. Old Bell Systems manhole and utility building (Left). Concrete casing that would have laid on top of the old leaded cable. This is like those found on the Detroit River, Location 1 (Upper Right). Newer AT&T flagging found a few feet away from the building. Hackensack 3.2. January 2023, Meadowlands, New Jersey. ....	40

**Commented [RM1]:** The TOC highlights an issue with organization. I tried to edit initial sections to follow the methods. That is organized by the 5 regions mentioned. This falls apart at west region and then is just listed by state no following of regions at all. So, need to fix methods or remove the south and midwest and west region headings and then regenerate. Not sure. If it were me, I would reorganize the entire document to be consistent across regions. And organized like it started on this page. But, I know that's a lot of work.

- Figure 18. Photos. New Jersey continued. Cable location with twenty leaded cables underneath the Bridge Street Bridge (Harrison Ave). Evidence of homeless sleeping next to these cables along the Passaic River (Left). Passaic 2. January 2023, Harrison/University Heights, New Jersey..... 41
- Figure 19. Photos. New Jersey continued. Cable location with approximately twenty-one exposed leaded cables underneath the Main Avenue Bridge near Wallington, New Jersey. This was a complex site with cables in multiple locations. Passaic Location 5, which includes twelve points of interest. January 2023, Wallington, New Jersey.... 42
- Figure 20. Photos. New Jersey continued. (A) Point of Interest: Passaic 3. (B) Point of Interest: South Kearney End. .... 43
- Figure 21. Photos. New York. Overhead leaded cables with splice boxes. Highland Falls Township. Highland Falls 1. January 2023, Highland Falls, New York. .... ~~47~~49
- Figure 22. Photos. New York continued. Left: Cables run under the road and into the Hudson River at Point of Interest: Hudson 3.1. Right: Severed cable and steel wire at the base of an old telephone pole, across from those pictured in the left image. Point of Interest: Hudson 3.4. January 2023, Near the Mid-Hudson Bridge, Highland, New York. .... ~~48~~50
- Figure 23. Photos. New York continued. Left: “Squirrel Guard” tied around an exposed area of leaded cable. Point of Interest: Newburgh 1. January 2023, Newbury, New York. Right: Damaged lead cable and splice box at the base of an old telephone pole. Point of Interest: New Windsor 1. January 2023, New Windsor, New York. .... ~~49~~51
- Figure 24. Photos. New York continued. Damaged lead sheathed cable at the base of a telephone in Wappingers Falls. Point of Interest: Wappingers Falls 3. January 2023, Wappingers Falls, New York..... ~~50~~52
- Figure 25. Photos. California. Lake Tahoe main telecommunications cable. LEFT: Severed cables, lead splice box on land. This photo was during a site visit with AT&T in January 2021. Top, RIGHT: Another splice location from land during the same site visit with AT&T in January 2021. RIGHT BOTTOM: Diver marking locations of damage during a survey in April/March 2022, Lake Tahoe, California. .... ~~53~~55
- Figure 26. Photos. California continued. Cable laying among boulders on the lake bottom (Top Left). Part of a broken anchor on the cable near Rubicon (Bottom Left). Broken cable anchor on land near Rubicon (Right). All photos from survey in April/March 2022, Lake Tahoe, California. .... ~~54~~56
- Figure 27. Photos. California continued. Severed end of 1920’s cable in Emerald Bay (Left). 1920’s Cable resting on the lake bottom in Emerald Bay (Right). May 2021, Emerald Bay – Lake Tahoe, California. .... ~~55~~57



TABLES

Table 1. Summary of sample types and locations for Louisiana..... 8

Table 2. Summary of sample types and locations for Michigan..... 17

Table 3. Summary of sample types and locations for Oregon..... 22

Table 4. Summary of sample types and locations for Idaho..... 26

Table 5. Summary of sample types and locations for Pennsylvania..... 31

Table 6. Summary of sample types and locations for West Virginia. .... 34

Table 7. Summary of sample types and locations for New Jersey. .... 38

Table 8. Summary of sample types and locations for New York. .... ~~46~~48

Table 9. Summary of sample types and locations for California..... ~~52~~54

## INTRODUCTION

The Environmental Defense Fund (EDF) seeks to understand the extent to which telecom and power cables that were constructed with lead components may pose a public health risk where those cables currently run through rivers, streams, and lakes that serve as drinking water sources. Many of these cables have been abandoned in place after reaching the end of their useful life. Marine Taxonomic Services, Ltd. (MTS) is a marine and aquatic consulting firm that has expertise and experience conducting environmental investigations in bodies of water. EDF contracted with MTS and funded an initial study to validate the location of abandoned cables and perform environmental sampling at locations adjacent to the cables. MTS carried out the study with logistical support from the Wall Street Journal (WSJ).

Understanding potential sources of lead in drinking water is critical to the protection of public health. The Environmental Protection Agency (EPA) has established an action level of lead in drinking water. The action level is 15 micrograms per liter (ug/L) (CDC 2019). Lead is widely understood as a public health threat with neurological, reproductive, and hypertensive implications for impacted individuals (CDC 2019). The National Toxicology Program (CDC 2012) concluded that there was sufficient evidence for adverse health effects in children and adults at blood lead levels of less than 5 micrograms per deciliter (µg/dL) of blood [CDC 2012]. However, no blood lead threshold for adverse health effects has been identified in children, and no BLL above zero is free of all risk (CDC 2019).

MTS investigated numerous locations in five regions across the U.S. where the WSJ provided permit records showing historical cable locations within rivers, streams, and lakes. Verification of permit records included determining if cables were present at those locations and visually assessing the composition of telecom and power cables. Water and sediment samples in the immediate vicinity were collected and tested for lead.

## METHODS

Five general regions were chosen for investigations. These included the west (California), northwest (Oregon and Idaho), Midwest (Michigan), mid-Atlantic (Pennsylvania, West Virginia, New Jersey, and New York) and south (Louisiana) (Figure 1~~Figure 1~~). MTS worked closely with the WSJ to evaluate permit records provided by the WSJ. The team narrowed down thousands of records and identified specific communities where lead sheathed telecommunications cables were likely to remain in place based on historical permits, NOAA navigational charts and the presence of geographic indicators.

The project goal was to document the presence and condition of lead containing cables within the region. Additionally, water and sediment samples were collected within water bodies where lead-containing cables were identified. Water and sediment samples were provided to analytical laboratories to determine the lead content. While MTS was responsible for implementing the field investigations and sampling, MTS was not responsible for making any determinations relative to the source of the lead in any given sample.

**Commented [TN2]:** I am assuming the mid-Atlantic was two locations (west PA and NJ/NY). I suggest framing it as six regions and rename the two locations in mid-Atlantic. It would be helpful because the contract calls for six regions and I don't think folks see Pittsburgh area as mid-Atlantic.

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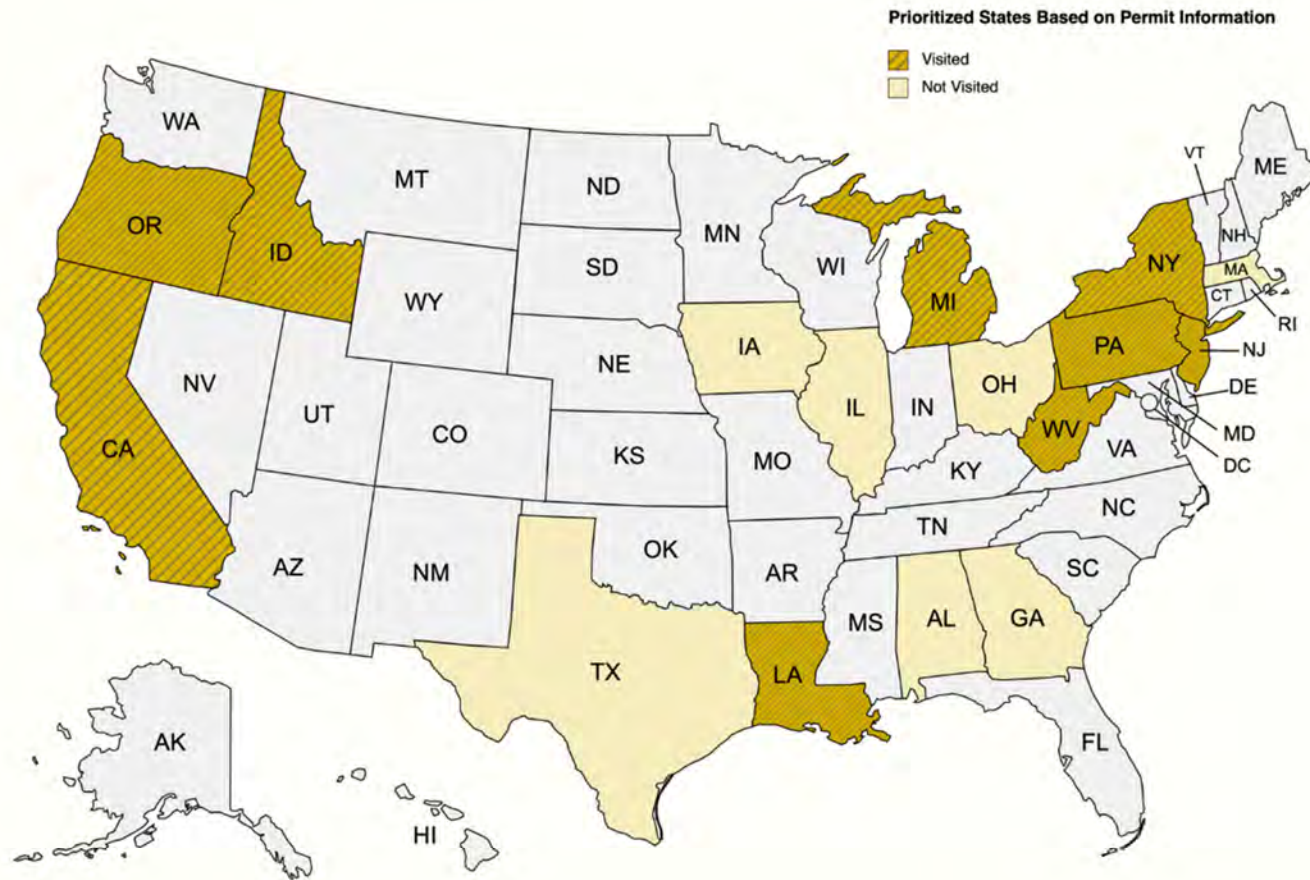


Figure 1. Overview map of priority states based on historical permit data collected by the Wall Street Journal.

**Commented [TN3]:** You have not explained what "prioritized states" means. I assume the list is all those for which WSJ had permit data. I suggest either explaining it, or simply dropping the term as well as the "not visited" states.

MTS traveled to the agreed upon locations and surrounding communities with the WSJ to investigate the permit locations for presence of lead sheathed cables. Documentation as to the presence and condition of the lead sheathed cables was collected at each identified location using Fulcrum, data management software provided by Below the Blue (BtB), a not-for-profit organization.

MTS collected samples per agreed to procedures as identified under methods for both diver-assisted collections and surface collections. Chain of Custody (COC) forms were created for each sampling region and then shipped with samples via FedEx to Pace Analytical Laboratories (Pace) out of Huntersville, NC. The analytical lab was arranged and paid for by the WSJ. The methods for field water and sediment sampling are described below.

MTS collected samples of water, soil, and other materials with the objective of screening for lead by focusing on worst case situations. The goal was not to assess the risk. If the worst-case situation revealed significant levels of lead, samples would need to be collected to assess the risk as a subsequent effort. Below is a summary of the sample collection methods.

## Water Sample Collection Methods

### *Diver Methods*

In cases where water samples were collected near cables and the cable ~~depth~~ was too deep to be accessed from the surface, divers collected water samples with a new plastic syringe. Once the sampling location was identified, the ~~dive tender~~ put on a pair of new nitrile gloves and the diver put on two pairs of gloves, one on top of the other. The dive tender removed the plastic syringe from its sealed wrapper. ~~The diver then removed a pair of gloves, as the diver would put on multiple pairs of gloves while their hands were dry prior to the dive. Removing one pair of gloves~~ ensured there was no contamination from contact with other items, such as the boat, between the time of entering the water and locating the cable and returning to the vessel or shore for the sampling syringe.

After ~~receiving~~ obtaining the unwrapped syringe from the dive tender, the diver would descend to relocate the cable. The diver approached the sampling location slowly and with careful buoyancy control to avoid disturbing the bottom when approaching the sampling location. The diver then collected water close to the cable by drawing on the syringe. The diver used a gloved finger to then cover the tip of the syringe and surfaced. At the surface, the syringe was provided to the dive tender. If the dive tender contacted any other items between the time of handing the syringe to the diver, the dive tender would change gloves. Once the syringe was provided to the dive tender, the dive tender opened a new plastic container as provided by the analytical laboratory and emptied the contents of the syringe into the container. The lid of the container was held while transferring the sample. The lid was then replaced, and the sample was stored with other samples collected on the same day in a cooler.

**Commented [TN4]:** I am not sure this captures it. The contract called for MTS to develop procedures to "Determine when and how to test water for lead to represent the potential contamination of water from the lead pipe cables." In response, MTS said it "will provide water samples to the recommended analytical laboratories to test the lead content of water bodies where cables are identified. Procedures will be include:

- Samples will be collected along a gradient relative to distance from the cable to determine if the cable or cables act as a source of lead contamination for the water body;
- Samples will be collected per agreed to procedures and in consultation with the analytical laboratory;
- Chain of custody records will be maintained for each sample;
- Samples will be provided to EDF's preferred laboratory.

After discussing the options on a call, I think EDF and MTS decided that our objective was to use sampling to determine if the lead cables n [1]

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**Commented [TN5]:** Who is this? The diver?

**Commented [TN6]:** Is this what happened?

**Commented [TN7]:** I don't understand. How many pairs did the diver put on at once? What does "while their hands were dry" mean? Are my edits accurate?

**Commented [TN8]:** Right?

**Commented [TN9]:** Any description of how close to the pipes the samples were typically taken?

### ***Surface Collection Methods***

Some samples were collected from the surface of water bodies. In these instances, nitrile gloves were put on by the sampling team. One team member opened the plastic container provided by the analytical laboratory and removed the lid. The lid was held during sampling as opposed to being set down. The container was then inverted and placed under water so it would fill with water when turned upside down to release the air. When the container was close to the cable, the team member ~~The container was then~~ turned the opening toward the surface and brought out of the water. The lid was then replaced, and the sample put into a cooler for storage. All coolers used for storage were cleaned with Liquinox and rinsed with deionized water prior to being used to store samples. During sampling from shore, care was taken to minimize sediment disturbance. Gloves were changed whenever multiple samples were collected.

**Commented [TN10]:** E  
ight? How close to the  
pipe?

### ***Sediment Collection Methods***

Sediment samples were collected using a stainless-steel scoop at locations adjacent to the cable and at various locations away from the cable. When collected on land or by diver, nitrile gloves were put on by the sampling team. One team member opened the plastic Ziplock bag and held it open for the sampler who used a site-washed (using Liquinox) stainless scoop to fill the bag with sampled sediment. The sample was labeled externally then doubled bagged, and then the sample put into a cooler for storage. All coolers used for storage were cleaned with Liquinox and rinsed with deionized water prior to being used to store samples. Gloves were changed whenever multiple samples were collected.

**Commented [TN11]:** E  
ased on this no sediment  
samples were collected  
from below the surface  
water. No diving was ever  
involved. Right?

**Commented [TN12]:** F  
ow close? Touching?

### ***Cable and Lead Collection Methods***

In addition to water and sediment samples, lead samples were taken from the investigated cables directly. Lead samples were collected using a stainless-steel scraper at locations where cables were deemed abandoned. Cables were determined to be abandoned in place through visual methods such as through identifying severed ends or observing signs of obvious disrepair. When collected on land or by diver, nitrile gloves were put on by the sampling team. One team member opened the plastic Ziplock bag and held it open for the sampler who used a site washed stainless scraper to put a few scrapings from the cable into the bag. The sample was labeled externally then doubled bagged, and then the sample put into a cooler for storage. All coolers used for storage were cleaned with Liquinox and rinsed with deionized water prior to being used to store samples. Gloves were changed whenever multiple samples were collected.

**Commented [TN13]:** A  
separate description is  
needed if diver took  
sample.

**Commented [TN14]:** F  
ow would this work for a  
diver?

## RESULTS

Each of the sections below provide the results of site visits within each of the 5 regions that were targeted for investigation. Those regions include South (Louisiana), Midwest (Michigan), Mid-Atlantic (Pennsylvania, West Virginia, New York, and New Jersey), West (Idaho, Oregon, California).

### South Region

#### Louisiana

Louisiana was the only state investigated within the South region. MTS visited a total of twenty-six different locations across the state of Louisiana. A total of sixty-four points of interest containing GPS data were collected while screening the twenty-six locations. The locations generally occurred along the Atchafalaya River, Bayou Boeuf, Bayou Lafourche, Bayou Teche and Mississippi River. These locations were visited over a period of three field days from June 3-5, 2022.

Eighteen points of interest were collected where visible leaded cables were noted; of those eighteen points, six points contained leaded power cables. Eight points of interest were recorded with Bell Systems manholes with a total of ten manholes and two possible vault locations; manholes were not removed and therefore additional investigation would be required to determine if leaded cables could be found at those locations. The remaining thirty-six points of interest consisted of water intake locations, signs, and old telephone poles. Southern Bell Telephone, South Central, AT&T and Bell Systems are the dominant companies represented in the area.

Louisiana had the most data points collected. There are only a few are highlighted in this summary report of findings as organized by water body below. A complete table of locations and identified points of interest are provide within each of the daily data collection reports referenced below. The daily reports are provided electronically with this document. The daily data collection reports also help to understand the initial naming conventions used for the points of interest highlighted.

*20220603\_Louisiana Data Collection – Final*

*20220604\_Louisiana Data Collection – Final*

*20220605\_Louisiana Data Collection – Final*

For analytical results, please reference Pace Project No.: 92613349.

#### Bayou Lafourche

Two locations with three points of interest along the Bayou Lafourche contained old telephone poles, the remnants of Bell Cable signs, and ground markers. There was some evidence suggesting these old cables may still be in use. However, we arrived at this location at night and

**Commented [TN15]:** I suggest making this six regions and breaking the mid-Atlantic into two. I think it is clearer and makes more sense since they were taken at different times on different trips.

**Commented [TN16]:** I don't understand. Does this mean that WSJ identified 64 locations as candidates for investigation? Why were only 26 investigated? Why not the others? Was nothing found in the others?

**Commented [TN17]:** C ollected? Do you mean investigated?

**Commented [TN18]:** I am confused by the 26 above and 18 here.

**Commented [TN19]:** v ho were the others? Why only mention Bell?

**Commented [TN20]:** I am confused. What 36 points? 64 minus 26 is 38? A table or flow chart might make it easier to understand.

**Commented [TN21]:** v hat does this mean? Is this about the cables? How WSJ identified them?

**Commented [TN22]:** I his seems more appropriate in a summary of the investigation. Consider a table with the top line information for each region such as number of potential sites to be investigated, how many were actually investigated, how many were found to be lead, and how many samples were collected.

**Commented [TN23]:** I s this information also provided with this document?



the area was heavily overgrown. The investigative team was only able to survey two points on the Bayou Lafourche due to time.

### *Bayou Teche*

Twelve points of interest along the Bayou Teche contained visible leaded cables, with both power and telecommunication cables at various locations. BT 1.1 was the first point of interest at this location; five feet of steel wire were observed protruding from the ground with a portion of damaged, bare leaded cable at the base [Figure 2](#)~~Figure 2~~. Further along the Bayou Teche, BT 16.1 illustrated a sort of debris field that would end up characterizing much of the area, a combination of new and old materials left in varying conditions and states of use ([Figure 2](#)~~Figure 2~~[Figure 2B](#)). BT 17.1 contained four leaded cables underneath the bridge: two power cables and one telecommunication cable. Sections of bare lead were observed near the water's surface ([Figure 2](#)~~Figure 2~~[Figure 2C](#)). Along the E. Bridge Street bridge in the historic district of St. Martinville, LA, BT 24.1 contained the first leaded splice box observed and was located along the sidewalk going into town ([Figure 2](#)~~Figure 2~~ and [Figure 3](#)~~Figure 3~~[Figure 3E](#)). This location also had a Bell Systems manhole. In Franklin, LA at Location BT 26.2, another exposed lead splice box and set of cables were observed in a small muddy duck pond in a public park with direct drainage into the Bayou Teche ([Figure 3](#)~~Figure 3~~[Figure 3E](#)).

### *Mississippi River*

The team worked along the Mississippi River into New Orleans, where there is a mix of revitalization, modified shorelines, and areas of abandoned debris. Location MISS 2.1 is near the Poydras Station, an area revitalized for tourism. This point of interest contained three Bell Systems manholes and a vault which is likely a hub and splice location for multiple cables. There is an AT&T utility building nearby. This site required ~~ds~~ boat access to identify whether the submarine cables remain in the river ([Figure 4](#)~~Figure 4~~). MISS 3.1 is an area along a biking path and greenway and abandoned cable location ([Figure 4](#)~~Figure 4~~ and [Figure 5](#)~~Figure 5~~[Figure 5](#)). This is a known homeless hangout with evidence of cable scrapping. Our investigative team spoke with one individual that had been staying nearby, and who said the cable was visible underwater. While this site is accessible from land, it would require a boat and diving equipment for further observations. The final location highlighted here is in Donaldsonville, LA. MISS 12 is comprised of four points of interest; 12.1, 12.2, 12.3 and 12.4. The first point of interest contains an exposed leaded splice box with an old air test line that appears to still be pressurized with newer connected tubing; point MISS 12.1 ([Figure 6](#)~~Figure 6~~). At that same point, on the opposite side of the pictured telephone pole, is a cut leaded cable ([Figure 6](#)~~Figure 6~~). The second point of interest within Location 12 is 12.3, which contains a damaged lead splice box and five leaded cables at the base of an old, cut telephone pole ([Figure 7](#)~~Figure 7~~). This collection of leaded cables and splice box are heavily damaged and appear to be disconnected from the infrastructure observed at 12.1.

### *Analytical Results by Sample*

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead

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**Commented [TN24]:** I his is not the bridge described in Figure 2. I am confused.

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**Commented [TN25]:** I am not seeing the slice box in Figure 2.

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**Commented [TN26]:** I don't see it on Figure 4.

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content at various points of interest where samples were collected. See Table 1. Summary of sample types and locations for Louisiana.

***State Summary & Recommendations***

Overall, the findings in Louisiana were robust. It is recommended that a more in-depth survey of the state be performed. There are locations where cables appear to be still in use, as such it is recommended to conduct additional studies on the implications of exposed, bare lead in these waterways. It is likely that more leaded cables would be discovered if more of the locations provided by the WSJ were investigated.



**Table 1. Summary of sample types and locations for Louisiana.**

Louisiana (18 Sites with Samples)							
Atchafalaya River, Bayou Teche and Mississippi River							
General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
BL 2.1	5-Jun-2022	0	2	0	0	2	W
BL 2.2	5-Jun-2022	0	2	0	0	2	W
<b>BT 1.1*</b>	<b>3-Jun-2022</b>	<b>1</b>	<b>3</b>	<b>1</b>	<b>2</b>	<b>7</b>	<b>SWLO</b>
BT 15.1	3-Jun-2022	0	2	0	0	2	W
<b>BT 17.1 (17.2 and 17.4)*</b>	<b>3-Jun-2022</b>	<b>1</b>	<b>4</b>	<b>1</b>	<b>0</b>	<b>6</b>	<b>SWL</b>
<b>BT 24.1</b>	<b>3-Jun-2022</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>L</b>
BT 25.1	3-Jun-2022	0	2	0	0	2	W
<b>BT 26.2 (26.3 and 26.4)*</b>	<b>4-Jun-2022</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>0</b>	<b>8</b>	<b>SWL</b>
BT 27.1	4-Jun-2022	0	2	0	0	2	W
<b>MISS 3.1*</b>	<b>4-Jun-2022</b>	<b>1</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>4</b>	<b>SWL</b>
MISS 1.4	5-Jun-2022	0	0	0	1	1	O
MISS 5.1	5-Jun-2022	0	2	0	0	2	W
MISS 6.1	5-Jun-2022	0	2	0	0	2	W
MISS 7.1	5-Jun-2022	0	2	0	0	2	W
<b>MISS 12.1*</b>	<b>5-Jun-2022</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
<b>MISS 12.3*</b>	<b>5-Jun-2022</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
<b>MISS 12.4*</b>	<b>5-Jun-2022</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>SL</b>
MISS 13.1	5-Jun-2022	0	2	0	0	2	W
<b>Totals for Louisiana</b>		<b>7</b>	<b>33</b>	<b>8</b>	<b>4</b>	<b>52</b>	

Notes for Louisiana:

52 Total Samples collected from 18 Sites

BT 1.1 (O) are pieces of cable.

BT 17.1, 17.2 and 17.4 samples are all under Location 17.1, for a total of 6 samples.

BT 26.2, 26.3 and 26.4 samples are all under Location 26.2, for a total of 8 samples.

MISS 1.4 (O) is a piece of cable.

MISS 12.4 (O) is a piece of cable.

**Bold line items include a lead sample.**

**\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**



(A) Remnants of bare leaded cable and steel wire below the Bridge Street Bridge. BT 1.1. June 2022, New Iberia, Louisiana.



(C) Rd. 320 southeast of New Iberia, LA. Cluster of leaded cables under the Oliver Bridge. BT 17.1. June 2022, New Iberia, Louisiana.



(B) Equipment debris field left by workers near the N Lewis Street Bridge. BT 16.1 June 2022, New Iberia, Louisiana.



(D) Up close photo of bare leaded cables going into a lead splice box. BT 24.1. June 2022, St. Martinville, Louisiana.

Figure 2. Photos. Louisiana. (A) Point of interest BT 1.1. (B) Point of Interest BT 16.2. (C) Point of Interest BT 17.1. (D) Point of Interest BT 24.1.



(E) Bare leaded cables going into a lead splice box near the sidewalk leading into the Historical District. BT 24.1. June 2022, St Martinville, Louisiana.



(F) Exposed lead splice box with attached cables and drainage into the Bayou Teche. BT 26.2. June 2022, Franklin, Louisiana.

Figure 3. Photos. Louisiana continued. (E) Point of Interest: BT 24.1. (F) Point of Interest: BT 26.5.





(G) New Orleans, LA. MISS 2.1 with Bell Systems manholes, vault, and Utility Building. This is a likely hub and splice area for cables, both old and new. June 2022.



(H) New Orleans, LA. MISS 3.1. is an abandoned collection of cables. This site is a known homeless hangout.

Figure 4. Photos. Louisiana continued. (G) Point of Interest: MISS 2.1. (H) Point of Interest: MISS 3.1.

**Commented [TN27]:** How was it known? Best to stick with what you saw.



(I) New Orleans, LA. MISS 3.1. The small rectangle on the left is the passthrough for utility cables. June 2022.



(J) New Orleans, LA. MISS 3.1. Remnants of outer steel wire from a leaded cable. Evidence that parts of the cable may have been scrapped for money. Locals told us that that was done to these cables.

Figure 5. Photos. Louisiana continued. (I-J) Point of Interest: MISS 3.





(K) Donaldsonville, LA. Location MISS 12.1. Exposed leaded splice box that appears to still be connected to an air test line. See photo (L) for the abandoned cable just the other side of the splice box. June 2022,



(L) Donaldsonville, LA. Location MISS 12.1. Close up of leaded cable next to lead splice box. June 2022.

Figure 6 Photos. Louisiana continued. (K) Point of Interest: MISS 12.1. (L) Point of Interest: MISS 12.1.





**Figure 7 Photos. Louisiana continued. Damaged and abandoned leaded splice box and collection of five leaded cables. MISS 12.3. June 2022, Donaldsonville, Louisiana.**

## Midwest Region

### Michigan

Michigan was the only state investigated within the Midwest region. MTS screened a total of seventeen different locations across the state of Michigan. A total of thirty-one points of interest containing GPS data were collected while screening the seventeen locations. The locations generally occurred along the Black River, Detroit River, Lake Huron (Saginaw River), Lake Michigan, St. Clair River, and the Straits of Mackinac. These locations were visited over a period of three field days from July 25- 27, 2022.

Two points of interest were collected along the Detroit River where visible leaded cables were noted. Fourteen points of interest were recorded with AT&T or Bell Systems manholes with a total of twenty-four manholes; manholes were not removed and therefore additional investigation would be required to determine if leaded cables could be found at those locations. One point of interest tracks a conduit path with an old air, leaded test line (Saginaw River). Additional details are provided for each of the areas listed below. Coordinates for each site and point of interest can be found in the following documents:

*20220725 Michigan Data Collection – Final*

*20220726 Michigan Data Collection – Final*

*20220727 Michigan Data Collection – Final*

For analytical results, please reference Pace Project No.: 92623057.

### ***Black River, Lake Huron (Saginaw River) and, St. Clair River***

These areas contained mostly AT&T and Bell Systems manholes totaling, ten points of interest with sixteen manholes, one vault and an old telephone pole. Location, LH 2, which includes points of interest 2.1, 2.2 and 2.3; also had an above ground conduit route with a lead sheathed air test line. There were paint markings on the road indicating an ATT corridor; this is likely an area of potential future investigation ([Figure 8](#)~~Figure 8~~). For additional information, refer to details in the report titled “*20220726 Michigan Data Collection – Final*”. Location, LH 3 is the site of a 1920’s era Historical Telecommunications Building and two large Bell Systems manholes. This could be a communications hub for the area.

### ***Lake Michigan (Lake Charlevoix) and Straits of Mackinac***

The locations investigated in the Lake Michigan and Straits of Mackinac area had evidence of previously existing cables in utility corridors. This included old telephone poles, signage, and Bell Systems manhole covers. Much of this area has been revitalized and there is evidence to show newer lines and technologies are in place. Evidence of the newer infrastructure includes, new AT&T flagging, fiber optic signage, and manhole covers. While the investigation team did not see open evidence of abandoned infrastructure, it is possible some exist beyond what is accessible by public access (e.g., under manhole covers).

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### ***Detroit River***

The only two locations in the screening areas to contain visible leaded cables were along the Detroit River. At Location DR 1, there were seven cables along the shoreline and two Bell Systems manholes near the road ([Figure 9](#)~~Figure 9~~). The other location with a single cable hanging from the bridge and going into the water was found at site DR 2. The cable was cut and clearly abandoned in place. For additional information, refer to detail in the report titled “202207727 Michigan Data Collection – Final”.

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### ***Analytical Results***

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 2. Summary of sample types and locations for Michigan](#)~~Table 2. Summary of sample types and locations for Michigan.~~

### ***State Summary & Recommendations***

Overall, the findings in Michigan showed few visible leaded cables with a high potential of buried cables in areas with significant manholes. This may indicate that additional cables could be identified with further investigation if access can be granted.

Table 2. Summary of sample types and locations for Michigan.

## Michigan (3 Sites with Samples)

## Detroit River

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
<b>DR 1*</b>	<b>27-Jul-2022</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>4</b>	<b>SWLO</b>
DR 2	27-Jul-2022	0	1	0	0	1	W
DR 3	27-Jul-2022	0	1	0	0	1	W
<b>Totals for Michigan</b>		<b>1</b>	<b>3</b>	<b>1</b>	<b>1</b>	<b>6</b>	

Notes for Michigan:

6 Total Samples collected from 3 Sites

DR 1 (O) Sample is a piece of tar sheathing.

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**



Figure 8 Photos. Michigan. Paint Markings indicating an AT&T service corridor. The leaded air test line follows these markings along the brick building shown above. July 2022, Bay City, MI.





(A) Seven leaded cables in the Detroit River. DR 1. July 2022, Trenton, MI.



(B) Leaded cables from (A) continuing past the tree line. They are buried in the ground and run up the hill to a Bell Systems manhole. DR 1. July 2022, Trenton, MI.



(C) Leaded cable along the Grosse Ile Parkway Bridge. The cable runs through the concrete and is cut just above the ledge. DR 2. Grosse Ile Township, MI.

Figure 9 Photos. Michigan continued. (A-B) Point of Interest: DR 1. (C) Point of Interest: DR 2.

## West Region

### *Oregon*

MTS screened a total of twelve different site locations across the state of Oregon and collected eighteen points of interest with GPS data. Investigation of locations along the Columbia River and the Willamette River occurred over a period of two field days, 3<sup>rd</sup> and 4<sup>th</sup> of August 2022. Eight points along the Willamette River contained approximately twenty-nine visible leaded cables; one of those locations contains a cable likely from the Abernathy Bridge, which was not within the screened locations; two points of interest were recorded with Bell Systems or PTCO manholes with a total of six manholes plus one vault; leaving the remaining points of interest being a combination of old telecommunication signage, old telephone poles, control locations and cable corridors where no cables were identified. Signs that remained standing within the cable corridors and those tacked into old telephone poles, are related to Pacific Northwest Bell, Western Union Telcom Co., and Bell Systems. Coordinates for each site and sample location can be found in the documents below.

*20220803\_Oregon Data Collection – Final*

*20220804\_Oregon Data Collection – Final*

For analytical results, please reference Pace Project No.: 92623524.

### *Columbia River*

There were two locations with three points of interest along the Columbia River. No visible leaded cable was observed at these points, however, there was evidence of old telephone poles, Oregon Washington Telephone Company signage, and remnants of the outer steel layer of a leaded cable.

### *Willamette River*

There were seven locations along the Willamette River in Oregon. Nine points of interest were recorded along the Willamette River containing visible leaded submarine cables in varied conditions. At low tide, with lower river levels, WR 1 can be seen on the shoreline protruding from the riverbed. This is a cut and abandoned leaded cable on the east bank of the Willamette River near Ross Island ([Figure 10](#)~~Figure 10~~). Our team spoke with a homeless man living on a nearby boat who mentioned the cables being visible at different times during the year. The same location had a newer cut telecommunications cable which also had a thin lead sheathing. Near the Oregon Maritime Museum and Waterfront Park Trail, WR 2.2 contains eleven leaded cables protruding from the wall and running into the Willamette River. The associated site WR 2, just over the railing has five Bell Systems manholes and what appears to be a large access vault ([Figure 10](#)~~Figure 10~~). Site WR 3 had a much older and smaller leaded cable running just below an old wooden, Western Union Telcom Co. Sign just below the Morrison Bridge ([Figure 10](#)~~Figure 10~~). Underneath the West Burnside Bridge, site WR 5.1 had four leaded cables that went submarine where the bridge opens. At the North Steel Bridge, point of interest, WR 6, is a collection of four leaded cables that were observed chained up to the concrete footings, until going inside the footings near the street ([Figure 11](#)~~Figure 11~~). These were not visible at the southwest end of the

bridge, which is also the northernmost end of Portland's Waterfront Park Trail and Greenway. As such, these cables are likely hidden within new development. The NW Broadway Bridge at point WR 7 contained a collection of six leaded cables. These cables go submarine at the point the bridge opens. Some of these cables have been struck and damaged by, passing boats, or floating debris in the river ([Figure 11](#)~~Figure 11~~). The final screened location WR 8, was an active construction site along the waterfront. There was limited access to the point of interest provided by the WSJ, however, the team observed a coiled up leaded cable on the barge. After a brief discussion with the foreman, it was learned that this cable may have been pulled from the Abernathy Bridge south of Ross Island. This was not a location the team had time to investigate during this trip refer to [Figure 11](#)~~Figure 11~~.

### ***Analytical Results***

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 3. Summary of sample types and locations for Oregon](#).~~Table 3. Summary of sample types and locations for Oregon.~~

### ***State Summary & Recommendations***

Overall, the findings in Oregon showed a high concentration of visible, leaded submarine cables in varied states of abandonment along the banks of the Willamette River at nearly every major bridge crossing observed. This area is a major shipping corridor and remains busy with continued construction. Further investigation into the status of these cables is suggested.

**Table 3. Summary of sample types and locations for Oregon.**

Oregon (14 Sites with Samples)  
Columbia River and Willamette River

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
<b>WR 1*</b>	<b>3-Aug-2022</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>SWL</b>
<b>WR 1.1</b>	<b>3-Aug-2022</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>L</b>
<b>WR 2.2*</b>	<b>4-Aug-2022</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>WL</b>
<b>WR 3*</b>	<b>4-Aug-2022</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>WL</b>
WR 3.2	4-Aug-2022	0	1	0	0	1	W
WR 4	4-Aug-2022	0	1	0	0	1	W
WR 5.1	4-Aug-2022	0	1	0	0	1	W
<b>WR 6*</b>	<b>4-Aug-2022</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>WL</b>
<b>WR 7*</b>	<b>4-Aug-2022</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>WL</b>
WR 8	4-Aug-2022	0	1	0	0	1	W
WR 9	4-Aug-2022	0	1	0	0	1	W
WR 10	4-Aug-2022	0	1	0	0	1	W
CR 1	4-Aug-2022	0	1	0	0	1	W
CR 2	4-Aug-2022	0	1	0	0	1	W
<b>Totals for Oregon</b>		<b>1</b>	<b>13</b>	<b>6</b>	<b>0</b>	<b>20</b>	

Notes for Oregon:

20 Samples collected from 14 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**





(A) Abandoned leaded cable near Ross Island. WR 1. August 2022, Portland, Oregon.



(C) Five Bell Systems manholes with vault. WR 2.2. August 2022, Portland, Oregon.



(B) Eleven cables near Maritime Museum and Waterfront Park. WR 2.2. August 2022, Portland, Oregon.



(D) Smaller leaded cable below Western Union Telecom Co. Sign. WR 3. August 2022, Portland, Oregon.

Figure 10. Photos. Oregon. (A) Point of Interest: WR 1. (B) Point of Interest: WR 2.2. (C) Point of Interest: WR 2.2. (D) Point of Interest: WR 3.





(E) North Steel Bridge cables. WR 6. August 2022, Portland, Oregon.



(G) Active construction site. Leaded cable. Kiewit 204. WR 8. August 2022, Portland, Oregon.



(F) NW Broadway Bridge cables. WR 7. August 2022, Portland, Oregon.



(H) Possible Abernathy Bridge cable. WR 8. August 2022, Portland, Oregon.

Figure 11. Photos. Oregon continued. (E) Point of Interest: WR 6. (F) Point of Interest: WR 7. (G) Point of Interest: WR 8. (H) Point of Interest: WR 8.

### **Idaho Data**

Investigation of data points along the Snake River, Clearwater River, and Lake Pend Oreille over a period of two field days, 5<sup>th</sup> and 6<sup>th</sup> of August 2022. MTS screened a total of eight different site locations across the state of Idaho, with a total of fifteen points of interests containing GPS data. Three points around Lake Pend Oreille contained four visible cables, with one of those points being a newer fiber optic line; two points of interest were recorded with Bell Systems manholes with a total of three manholes; leaving the remaining leaving the remaining points of interest being a combination of old telecommunication signage, old telephone poles, control locations and cable corridors where no cables were identified. Signs that remained standing within the cable corridors and those tacked into old telephone poles, are related to General Telephone Company (GTE), Century Link, and Bell Systems. Coordinates for each site and sample location can be found in the documents below.

*20220805\_Idaho Data Collection – Final*

*20220806\_Idaho Data Collection – Final*

For analytical results, please reference Pace Project No.: 92623524.

### **Clearwater River and Snake River**

Aside from three Bell Systems manholes and three points with “Cable Crossing” signs, this area was void of visible cables. Our team spoke with a lifetime resident and local fisherman on the Clearwater River near the Levee Path in North Lewiston who was aware of the cables from growing up. It is possible with more time and resources we might find them on the riverbed.

### **Lake Pend Oreille**

There was one point with visible leaded cables in Idaho that was found in the Lake Pend Oreille on the southeast end of the railroad bridge near Highway 95. This collection of cables was cut and left in place at the base of the bridge. At the time of our most recent visit, there was construction work and a large barge over the location of the cables which are tangled underwater. Refer to [Figure 12](#) ~~Figure 12~~ and [Figure 13](#) ~~Figure 13~~ for Lake Pend Oreille photos.

### **Analytical Results**

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 4. Summary of sample types and locations for Idaho.](#) ~~Table 4. Summary of sample types and locations for Idaho.~~

### **State Summary & Recommendations**

Overall, our findings in Idaho showed few visible leaded cables with a high potential of buried cables in areas where signs and Bell Systems manholes were observed. The cables found off the old railroad bridge have been cut and left near the base of the bridge. They are clearly abandoned and should be removed. Further investigation into the status of these cables and how to move forward with the next steps of removing the remnants is suggested.

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**Table 4. Summary of sample types and locations for Idaho.**

Idaho (8 Sites with Samples)							
Snake River, Clearwater River and Lake Pend Oreille (Pend Oreille River)							
General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
SR 2.1	5-Aug-2022	0	1	0	0	1	W
SR 1	5-Aug-2022	0	1	0	0	1	W
CLR 3.2	5-Aug-2022	0	1	0	0	1	W
LP 1.2	6-Aug-2022	1	1	0	0	2	SW
LP 2	6-Aug-2022	0	1	0	0	1	W
LP 3	6-Aug-2022	0	1	0	0	1	W
<b>LP 4.1*</b>	<b>6-Aug-2022</b>	<b>0</b>	<b>2</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>WL</b>
LP 5	6-Aug-2022	0	1	0	0	1	W
<b>Totals for Idaho</b>		<b>1</b>	<b>9</b>	<b>1</b>	<b>0</b>	<b>11</b>	

Notes for Idaho:

11 Samples collected from 8 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**



(A) Lake Pend Oreille, ID Railroad Bridge. August 2022.



(B) Photo. Leaded cables just below the surface. Site LP 4.1. August 2022, Lake Pend Oreille, ID.



(C) Leaded cables cut and hanging from bridge. Site LP 4.1. August 2022, Lake Pend Oreille, ID.



(D) Bare lead (top right). Cut end, near fish (mid-left). Site LP 4.1. August 2022, Lake Pend Oreille, ID.

Figure 12. Photos. Idaho. (A) Lake Pend Oreille Railroad Bridge. (C-D) Point of Interest: LP 4.1.





(E) Close up of cut, bare leaded cable underwater. Site LP 4.1. August 2022, Lake Pend Oreille, ID.



(F) Leaded cables abandoned and coiled below the surface. Site LP 4.1. August 2022, Lake Pend Oreille, ID.



(G) Close up of bare lead from abandoned cables. Site LP 4.1. August 2022, Lake Pend Oreille, ID.

Figure 13. Photos. Idaho continued. (E-G) Point of Interest: LP4.1

### **Pennsylvania Data**

Investigation of data points along the Allegheny River, Ohio River, Monongahela River, including California Township (Coal Center) over a period of three field days, 23<sup>rd</sup>, 24<sup>th</sup> and 25<sup>th</sup> October 2022. We screened a total of thirteen different site locations across the state of Pennsylvania with a total of thirty-two points of interest containing GPS data. Two points along the Allegheny River contained visible leaded cables; six points of interest were recorded with Bell systems manholes with a total of nine manholes; thirteen points of interest were recorded within California Township (Coal Center) which followed a bare, overhead, leaded telecommunication cable; leaving the remaining points of interest being a combination of old telecommunication signage, old telephone poles, control locations and cable corridors where no cables were identified. Signs that remained standing within the cable corridors and those tacked into old telephone poles, are related to Bell Atlantic and Bell Telephone Company of PA. Coordinates for each site and sample location can be found in the documents below.

*20221023 Pennsylvania Data Collection – Final*

*20221024 Pennsylvania Data Collection – Final*

*20221025 Pennsylvania Data Collection – Final*

Note: A return trip was made the 14<sup>th</sup> of February 2023, to gain more information from the overhead telecom cable located in Coal Center, PA.

*20230214 Pennsylvania Data Collection –Samples Collected – Final*

*20230214 Pennsylvania Data Collection –Tracked Data Points ONLY - Final*

For analytical results, please reference Pace Project No.: 92633784.

### ***Allegheny River, Ohio River, and Monongahela River***

Aside from the overhead cable found within California Township (Coal Center), there were only two points along the Allegheny River where visible leaded cable was recorded.

### ***California Township (Coal Center)***

This is the first location during the project where extensive overhead, leaded cables were documented and observed. The areas of interest within California and Coal Center, are adjacent and to the west of the Penn West California University, an area that was notably less affluent. Thirteen points of interest were recorded, covering an approximate distance of .9 miles worth of visible, overhead leaded cable ([Figure 14](#)~~Figure 14~~). This is an estimation following the streets, and not an exact calculation of length. This cable starts on 2<sup>nd</sup> Street, across from campus and runs through California to the edge of Coal Center where it appears to terminate a few blocks uphill from the Monongahela River's edge. The cable crosses overhead at parks, senior care centers, and lots where kids were playing. Locals in the area suggested that other adjacent townships may have similar overhead cables that should be explored. Recommend further investigations.

### ***Analytical Results by Sample***

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 5. Summary of sample types and locations for Pennsylvania](#). ~~Table 5. Summary of sample types and locations for Pennsylvania.~~

### ***State Summary & Recommendations***

Overall, our findings in Pennsylvania showed few visible leaded submarine cables and limited access to areas of interest due to areas of heavy overgrowth. This was the first location where overhead, leaded cables were observed and required a change in how the data was recorded for efficiency. The data application needed to be adjusted to not require the cable details for each point of interest, since it was the same cable running through town. MTS recognizes the need for a more thorough investigation of all areas with overhead bare lead sheathed cables.

**Table 5. Summary of sample types and locations for Pennsylvania.****Pennsylvania (19 Sites with Samples)**

Ohio River, Allegheny River, Coal River, and California Township (Coal Center)

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
AR - 1	24-Oct-2022	1	0	0	0	1	S
AR - 2	24-Oct-2022	0	1	0	0	1	W
AR - 5	24-Oct-2022	0	1	0	0	1	W
CR - 1	25-Oct-2022	1	1	0	0	2	SW
CR - 2	25-Oct-2022	1	0	0	0	1	S
CT - 1	25-Oct-2022	1	0	0	0	1	S
CT - 2	25-Oct-2022	1	0	0	0	1	S
<b>CT - 3*</b>	<b>25-Oct-2022</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
CT - 4	25-Oct-2022	1	0	0	0	1	S
CT - 5	25-Oct-2022	1	0	0	0	1	S
CT - 6	25-Oct-2022	1	0	0	0	1	S
CT - 7	25-Oct-2022	1	0	0	0	1	S
CT - 8	25-Oct-2022	1	0	0	0	1	S
<b>CT - 9*</b>	<b>25-Oct-2022</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>SWL</b>
CT - 10	25-Oct-2022	1	1	0	0	2	SW
CT - 11	25-Oct-2022	1	0	0	0	1	S
CT - 12	25-Oct-2022	1	0	0	0	1	S
CT - 13	25-Oct-2022	1	1	0	0	2	SW
OR - 3.1	25-Oct-2022	0	1	0	0	1	W
<b>Totals for Pennsylvania</b>		<b>16</b>	<b>7</b>	<b>2</b>	<b>0</b>	<b>25</b>	

Notes for Pennsylvania:

25 Samples collected from 19 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**





CT6



CT11



CT8



CT12

Figure 14. Points along the Overhead leaded telecommunications cables that runs approximately 0.9 miles through California Township and Coal Center, PA. CT 6, CT 8, CT 11 (February 2023), and CT 12. October 2022. California Township and Coal Center.

### **West Virginia Data**

Investigation of data points along the Coal River and Kanawha River over a period of two field days, 26<sup>th</sup> and 27<sup>th</sup> of October 2022. MTS screened a total of fourteen different site locations across the state of West Virginia with a total of twenty-eight points of interest containing GPS data. Three points along the Kanawha River contained visible leaded cables; fourteen points of interest were recorded with Bell Systems manholes with a total of five manholes; leaving the remaining points of interest being a combination of old telecommunication signage and old telephone poles. People in this area was generally unwelcoming, and we were unable to gain access to a few locations of interest. Signs that remained standing within the cable corridors and those tacked into old telephone poles, suggest that the primary telecommunications company for this area was C&P Telephone Company of West Virginia. Coordinates for each site and sample location can be found in the documents below.

*20221026 West Virginia Data Collection – Final*

*20221027 West Virginia Data Collection – Final*

For analytical results, please reference Pace Project No.: 92633784.

### **Kanawha River**

The only three locations in our screening areas to contain visible leaded cables were along the Kanawha River. At Site KR 1.3, we identified two leaded cables ([Figure 15](#)~~Figure 15~~). This is the landing area for the Old Pliny Ferry Crossing near Frazier Bottom. Site KR 3.1 was heavily overgrown; but we were able to identify at least two leaded cables with splice boxes with sections of bare lead. The cable identified in Site KR 3.5 is part of the overall Site 3. From a distance we were only able to identify one cable on the telephone poles with bare lead. The cable corridor continues along railroad tracks and was largely inaccessible to track the cable further. For additional information please see “*20221026 West Virginia Data Collection – Final*”.

### **Analytical Results by Sample**

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 6. Summary of sample types and locations for West Virginia](#)~~Table 6. Summary of sample types and locations for West Virginia.~~

### **State Summary & Recommendations**

Overall, our findings in West Virginia showed few visible leaded cables and limited access to areas of interest due to areas of heavy overgrowth and unwelcoming neighborhoods. However, there is evidence to support further investigation.

**Table 6. Summary of sample types and locations for West Virginia.**

## West Virginia (11 Sites with Samples)

Coal River and Kanawha River

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
Coal R - 1	26-Oct-2022	0	1	0	0	1	W
KR - 1.2	26-Oct-2022	0	1	0	0	1	W
KR - 1.3	26-Oct-2022	1	0	0	0	1	S
KR - 2	26-Oct-2022	0	1	0	0	1	W
<b>KR - 3.1*</b>	<b>26-Oct-2022</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
KR - 3.3	26-Oct-2022	0	1	0	0	1	W
KR - 3.4	26-Oct-2022	0	1	0	0	1	W
KR - 4	26-Oct-2022	1	0	0	0	1	S
KR - 5	26-Oct-2022	0	1	0	0	1	W
KR - 11	26-Oct-2022	0	1	0	0	1	W
<b>Totals for West Virginia</b>		<b>3</b>	<b>7</b>	<b>1</b>	<b>0</b>	<b>11</b>	

Notes for West Virginia:

11 Samples collected from 11 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**





Figure 15. Photos taken in West Virginia. Site for the Old Pliny Ferry Crossing at Frasier's Bottom. Two bare leaded cables were observed at the end of Ferry Lane. KR 1.3. October 2022, Pliny, West Virginia.

### **New Jersey Data**

Investigation of data points along the Passaic River and Hackensack River, including the South Kearny Area over a period of two field days, 9<sup>th</sup> and 10<sup>th</sup> of January 2023. MTS screened a total of twenty-one different site locations across the state of New Jersey with a total of forty-five points of interest containing GPS data. Eleven points shared an approximate total of fifty-three visible leaded cables; five of those points were areas containing bare, overhead leaded cable; sixteen points were recorded with Bell Systems or AT&T manholes with a total of forty manholes and two utility buildings; leaving the remaining points of interest being a combination of old telecommunication signage, telephone poles, control locations and one suspected gas pipeline point. Signs that remained standing within the cable corridors and those tacked into old telephone poles, suggest that the primary telecommunications company for this area was Bell Systems and AT&T. Coordinates for each site and sample location can be found in the documents below.

*20230109\_New Jersey Data Collection – Final*

*20230110\_New Jersey Data Collection – Final*

For analytical results, please reference Pace Project No.: 92647004.

### **Hackensack River**

The investigation along the Hackensack River started with an active construction site containing four Bell System manholes (Hackensack 1) and what appeared to be an old abutment at the water's edge. This would be where the cables came to ground, but access was limited due to construction. The workers allowed us near the fenced area for quick observations. The next location (Hackensack 2) had visible cable crossing signs on both sides of the Passaic River, identifying it as a cable corridor. There was a large concrete vault with eight Bell Systems manholes at the river's edge and within the Lincoln Park & Nature Trail recreation area, suggesting that this location is an area that would contain numerous cables ([Figure 16](#), [Figure 16](#)). Hackensack 3 was recorded in the now, largely abandoned areas around the American Dream Plaza, Meadowlands. This area used to have an old marina and launch ramp at River Barge Park with two adjacent piers that may have served as an old Ferry landing. This area consisted of cable crossing signs on both sides of the river, at least one old telephone pole, one Bell Systems manhole and an old Bell Systems Utility Building. Location observations suggested an old telecommunications cable existed at one point going into the building. There was newer AT&T flagging on the ground, but overall, this area was largely overgrown and difficult to traverse ([Figure 17](#), [Figure 17](#)). It does warrant further investigation and access from the river to determine without a doubt if submarine cables remain in place. The other locations along the Hackensack included cable crossing signs, Bell Systems manholes; a newly developed bridge area; and the South Kearny area, which is addressed separately.

### **Passaic River**

The investigation along the Passaic River started with an Old Bell Utility Building with seven Bell Systems manholes scattered around the area: four behind a chain link fence and three in a nearby

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grass area. This is likely a hub or main connection point for multiple cables. There were three main locations in New Jersey that contained a complex scattering of manholes and numerous visible leaded cables; Passaic 2 with approximately twenty leaded cables visible on both sides of the Bridge Street Bridge ([Figure 18](#)~~Figure 18~~); Passaic 5 with approximately twenty-one visible, leaded cables between the eleven points of interests making up that location, and Passaic 8 with eleven visible, leaded cables on both sides of the Wall Street Bridge ([Figure 19](#)~~Figure 19~~). Finally, Passaic 3 contained one visible, armored telecommunications cable ([Figure 20](#)~~Figure 20~~). There was approximately 15-ft of armoring before the cable was visible near the waterline. Once the armoring terminated and the leaded cable became visible just above the waterline; observations of lead residue became apparent. This cable was only visible on one side of the bridge and would not be visible with higher water levels.

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### ***South Kearny Area***

South Kearny is a location with approximately 0.4 miles of exposed, overhead leaded telecommunications cables (2 cables, 2" diameter). Both ends of the cable are cut and shrink wrapped, however, much of the cable remains exposed to the elements ([Figure 20](#)~~Figure 20~~). There are remnants of old hangers on wire that would have aided in holding the weight of the cable. These can be seen in the field reports 9 January 2023 under South Kearny, End A. We collected four sediment samples within the 0.4-mile area of the cable. 1 control location and 3 below the hanging cable. All coordinates can be found in the New Jersey Data Collection Files.

### ***Analytical Results by Sample***

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected. See [Table 7. Summary of sample types and locations for New Jersey](#).~~Table 7. Summary of sample types and locations for New Jersey.~~

### ***State Summary & Recommendations***

Overall, our findings show a significant increase in the density and the number of visible leaded submarine cables within screened locations, and a growing trend of observations with overhead, leaded telecommunication cables. New Jersey is a candidate for further scientific research given the easy access to areas with numerous leaded cables. MTS recommends a more thorough investigation of all areas with overhead bare lead sheathed cables.

Table 7. Summary of sample types and locations for New Jersey.

New Jersey (17 Sites with Samples)							
Passaic River and South Kearny Neighborhood							
General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
Passaic 10	10-Jan-2023	1	0	0	0	1	S
<b>Passaic 2*</b>	<b>10-Jan-2023</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>WL</b>
Passaic 3	9-Jan-2023	1	1	0	0	2	SW
Passaic 4	9-Jan-2023	1	0	0	0	1	S
<b>Passaic 5.10*</b>	<b>10-Jan-2023</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>SWL</b>
<b>Passaic 5.3*</b>	<b>10-Jan-2023</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>SWL</b>
<b>Passaic 5.8*</b>	<b>10-Jan-2023</b>	<b>1</b>	<b>1</b>	<b>3</b>	<b>0</b>	<b>5</b>	<b>SWL</b>
Passaic 5.9	10-Jan-2023	1	1	0	0	2	SW
Passaic 6	10-Jan-2023	1	0	0	0	1	S
Passaic 7	10-Jan-2023	1	0	0	0	1	S
<b>Passaic 8*</b>	<b>10-Jan-2023</b>	<b>1</b>	<b>1</b>	<b>2</b>	<b>0</b>	<b>4</b>	<b>SWL</b>
Passaic 8.1	10-Jan-2023	1	1	0	0	2	SW
Passaic 9	10-Jan-2023	1	0	0	0	1	S
South Kearny 1	9-Jan-2023	1	0	0	0	1	S
South Kearny 2	9-Jan-2023	1	0	0	0	1	S
South Kearny 3	9-Jan-2023	1	0	0	0	1	S
South Kearny 4	9-Jan-2023	1	0	0	0	1	S
<b>Totals for New Jersey</b>		<b>16</b>	<b>8</b>	<b>8</b>	<b>0</b>	<b>32</b>	

Notes for New Jersey:

32 Total Samples collected from 17 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**





(A) Large vault with eight Bell Systems manholes on the Hackensack River. Looking towards South Kearny. January 2023, West Side, New Jersey.



(C) Vault area looking towards Lincoln Park Wetlands & Nature Trail. January 2023, West Side, New Jersey.



(B) Cable landing area covered with concrete. Area is below the sign in (D).



(D) Cable Crossing Sign. January 2023, West Side, New Jersey.

Figure 16. Photos. New Jersey. (A-D) Cable locations near Lincoln Park Wetlands & Nature Trail. Hackensack 2. January 2023, West Side, New Jersey.





Figure 17. Photos. New Jersey continued. Largely abandoned area around the Meadowlands. Old Bell Systems manhole and utility building (Left). Concrete casing that would have laid on top of the old leaded cable. This is like those found on the Detroit River, Location 1 (Upper Right). Newer AT&T flagging found a few feet away from the building. Hackensack 3.2. January 2023, Meadowlands, New Jersey.



Figure 18. Photos. New Jersey continued. Cable location with twenty leaded cables underneath the Bridge Street Bridge (Harrison Ave). Evidence of homeless sleeping next to these cables along the Passaic River (Left). Passaic 2. January 2023, Harrison/University Heights, New Jersey.





Figure 19. Photos. New Jersey continued. Cable location with approximately twenty-one exposed leaded cables underneath the Main Avenue Bridge near Wallington, New Jersey. This was a complex site with cables in multiple locations. Passaic Location 5, which includes twelve points of interest. January 2023, Wallington, New Jersey.



(A) Armored cable approximately fifteen feet from the water's edge. Passaic 3. January 2023, Belleville, New Jersey. .



(B) Overhead cut, leaded cables in the South Kearny area. There are two cables that run approximately 0.4 miles. South Kearny End A. January 2023, Kearny, New Jersey.

Figure 20. Photos. New Jersey continued. (A) Point of Interest: Passaic 3. (B) Point of Interest: South Kearny End.



### **New York Data**

Investigation of data points along the Hudson River, Harlem River, Wappingers Falls and the Townships of New Windsor, Newburgh, Highland Falls, and the Palisades; over a period of two field days, 11<sup>th</sup> and 12<sup>th</sup> of January 2023. MTS screened a total of twenty-three different site locations across the state of New York with a total of thirty-seven points of interest containing GPS data. Fourteen points with visible leaded cables were found in the areas of Highland Falls, New Windsor, Newburgh, Wappingers Falls and the Hudson River; four points of interest were recorded with Bell Systems manholes with a total of four manholes and a potential vault; leaving the remaining points of interest being a combination of old telecommunication signage and old telephone poles. Signs that remained standing within the cable corridors and those tacked into old telephone poles, suggest that the primary telecommunications company for this area was Bell Systems, New York Telephone and Verizon. Coordinates for each site and sample location can be found in the documents below.

*20230111 New York Data Collection – Final*

*20230112 New York Data Collection – Final*

For analytical results, please reference Pace Project No.: 92647004.

#### **Highland Falls Township**

Four generalized data points were recorded for Highland Falls Township. Leaded cable appears to run throughout the town and is occasionally covered with a protective sheathing that encompasses parts of the cable. Visible bare leaded splice boxes were observed at nearly every telephone pole. ([Figure 21](#)~~Figure 21~~). This site required more time than was available for detailed observations and further investigation is recommended.

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#### **Hudson River and Palisades**

Three points along the Hudson River contained a total of eleven visible, leaded cables. One of these points (Hudson 7) is also referenced in the Palisades Neighborhood where overhead leaded cables were observed. Hudson 3 location was the most comprehensive location with points of interest along the east and west shorelines of the Hudson River. This location contained evidence of old telecommunication signage; Bell Systems manholes and possible vault, visible leaded cables; and cut cables at the base of an old telephone pole ([Figure 22](#)~~Figure 22~~). The MTS and WSJ team spoke with a homeowner who lives near the tracks on the west shore of the Mid-Hudson Bridge. The team learned of a doctor in the early 1900's who may have had utilities brought to the area as well as a historic hotel on top of the hillside. Further fact checking and investigation is recommended.

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#### **Newburgh and New Windsor Township**

Eight generalized points were recorded across Newburgh and New Windsor Townships. MTS observed cables at various locations while passing through both towns. In Newburgh, MTS spoke with a Verizon worker who mentioned that lead was a concern of theirs in the area, but that they were understaffed and unable to address those concerns. Newburgh was the first area that our team noticed a plastic umbrella covering, that we learned was called a squirrel guard ([Figure](#)

[23Figure 23](#)). This covering does not contain the entire cable and is theoretically used to help prevent the squirrels from eating the cables and damaging the lines. In New Windsor, one point was recorded showing damaged cable and splice box at the base of a telephone pole near a busy intersection. The cable looks to be out of service but would require a more thorough investigation ([Figure 23Figure 23](#)).

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### ***Palisades Neighborhood -Washington Square Road and Hudson River***

There are three generalized points withing the Palisades Neighborhood. Hudson 7 and Hudson 8 are both found in the Palisades Neighborhood where Washington Springs Road turns into Snedens Landing and terminates along the Hudson River. This is an affluent area filled with mansions and has sections of overhead bare leaded cable running from the river to along Washington Springs Road. MTS stopped tacking the cable near highway 9W. This is a relatively compact neighborhood with narrow roads leading the large mansions. The utility poles are close to the road with leaded cables running directly overhead. MTS recommends a more thorough investigation of the area to determine if there are additional lines that were not initially observed.

### ***Wappingers Falls Township***

Three points within Wappingers Falls contained visible leaded cables; observations at Wappingers Falls 3 shows a damaged cable and splice box at the base of a telephone pole. The cable looks to be out of service ([Figure 24Figure 24](#)). Wappingers Falls, 4 has an overhead leaded cable near a grassy play area. MTS recommends a more thorough investigation.

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### ***Analytical Results by Sample***

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected.

### ***State Summary & Recommendations***

Overall, our findings in New York were like those in New Jersey, with visible lead sheathed submarine cables and, an increasing number of observed, overhead, lead sheathed telecommunication cables. MTS recommends of more thorough investigation of all areas with overhead bare leaded cables, to map locations and determine if there are health and safety risks that may be present for the residents.

**Table 8. Summary of sample types and locations for New York.**

New York (11 Sites with Samples)  
Hudson River, New Windsor and Wappingers Falls

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
Hudson 3.1	11-Jan-2023	0	1	0	0	1	W
<b>Hudson 3.4*</b>	<b>11-Jan-2023</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
Hudson 4	11-Jan-2023	0	1	0	0	1	W
Hudson 5	12-Jan-2023	0	1	0	0	1	W
Hudson 6	12-Jan-2023	1	0	0	0	1	S
Hudson 7	12-Jan-2023	1	1	0	0	2	SW
Hudson 8	12-Jan-2023	1	0	0	0	1	S
<b>New Windsor 1*</b>	<b>11-Jan-2023</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>2</b>	<b>SL</b>
New Windsor 2	11-Jan-2023	1	0	0	0	1	S
<b>Wappingers Falls 3</b>	<b>12-Jan-2023</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>L</b>
Wappingers Falls 4	12-Jan-2023	1	0	0	0	1	S
<b>Totals for New York</b>		<b>7</b>	<b>4</b>	<b>3</b>	<b>0</b>	<b>14</b>	

Notes for New York:

14 Total Samples collected from 11 Sites

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis. (SWL, SL, WL)**



Figure 21. Photos. New York. Overhead leaded cables with splice boxes. Highland Falls Township. Highland Falls 1. January 2023, Highland Falls, New York.





**Figure 22. Photos. New York continued. Left: Cables run under the road and into the Hudson River at Point of Interest: Hudson 3.1. Right: Severed cable and steel wire at the base of an old telephone pole, across from those pictured in the left image. Point if Interest: Hudson 3.4. January 2023, Near the Mid-Hudson Bridge, Highland, New York.**





Figure 23. Photos. New York continued. Left: "Squirrel Guard" tied around an exposed area of lead cable. Point of Interest: Newburgh 1. January 2023, Newbury, New York. Right: Damaged lead cable and splice box at the base of an old telephone pole. Point of Interest: New Windsor 1. January 2023, New Windsor, New York.





Figure 24. Photos. New York continued. Damaged lead sheathed cable at the base of a telephone in Wappingers Falls. Point of Interest: Wappingers Falls 3. January 2023, Wappingers Falls, New York.

### California Data

Investigation of data points along two specific cables that have been identified in Lake Tahoe and Emerald Bay: over a period of four field days, 30<sup>th</sup> and 31<sup>st</sup> of March 2023 and the 5<sup>th</sup> and 6<sup>th</sup> of May of January 2023. MTS screened a total of twenty-one points of interest along both cables to collect samples. The primary telecommunications company for this area was Bell Systems and AT&T. Coordinates for each site and sample location can be found in the documents below.

*20230330 California Data Collection – Final*

*20230331 California Data Collection – Final*

*20230505 California Data Collection - Final*

*20230506 California Data Collection – Final*

For analytical results, please reference Pace Project No.: 92661394 and Pace Project No.: 92666635.

### Lake Tahoe

The main Lake Tahoe cable is approximately seven miles long and runs along the western shoreline from Baldwin Beach to Four-Ring Road. It was installed 1955 in efforts to extend and improve telecommunications to the west shore. This is a 3.5" lead sheathed cable with five leaded splice boxes on land. This cable is not severed in water, but there are numerous damaged locations. This cable is severed on land. The cable can be observed above water to roughly 100-ft deep in Lake Tahoe. The Rubicon area is a wall of granite, and the cable is draped along the granite wall and boulders. All steel rock anchors and associated cables that would have held the cable in place, are broken ([Figure 25](#) ~~Figure 25~~ and [Figure 26](#) ~~Figure 26~~).

### Emerald Bay

The shorter Emerald Bay cable is approximately two thousand feet long and runs across the mouth of Emerald Bay. It was installed in 1928 in efforts to bring telecommunication to the Vikingsholm Property located within the bay. This is a 3" lead sheathed cable with two severed ends in the water. At some point, this cable was drug and damaged by a large vessel and now rests by the sill of Emerald Bay. It is possible, this event or series of events lead to its abandonment ([Figure 27](#) ~~Figure 27~~).

### Analytical Results by Sample

MTS has not performed any analysis relative to collected field samples and their lead content. Points of interest can be cross referenced to the Pace Analytical report to understand lead content at various points of interest where samples were collected.

### State Summary & Recommendations

These two cables are part of an ongoing settlement, where AT&T has agreed to removed them from Emerald Bay and Lake Tahoe.

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Table 9. Summary of sample types and locations for California.

## California - Lake Tahoe Cable (26 Sites with Samples)

Lake Tahoe including Emerald Bay

General Information		Type of Sample Collected					
Site	Date Collected	Sediment (S)	Water (W)	Lead (L)	Other (O)	Total per Site	Code
LTI 1.1	5-May-2023	0	1	0	0	1	W
<b>LT 1.2*</b>	<b>30-Mar-2023 and 1-Apr-2023</b>	<b>1</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>4</b>	<b>SL</b>
LTI 2.1	5-May-2023	0	1	0	0	1	W
LTI 3.1	5-May-2023	0	1	0	0	1	W
EB 1	31-Mar-2023 and 5-May-2023	1	2	0	0	3	SW
EB 1.1	31-Mar-2023 and 5-May-2023	2	2	0	0	4	SW
EB 1.2	5-May-2023	0	1	0	0	1	W
EB 1.3	5-May-2023	0	1	0	0	1	W
EB 1.4	5-May-2023	0	1	0	0	1	W
EB 1.5	5-May-2023	0	1	0	0	1	W
EB 1.6	5-May-2023	0	1	0	0	1	W
EB 1.7	5-May-2023	0	1	0	0	1	W
EB 3	5-May-2023	0	1	0	0	1	W
EB 4	5-May-2023	0	1	0	0	1	W
LT 1.4	31-Mar-2023 and 5-May-2023	2	2	0	0	4	SW
LT 4	5-May-2023	0	1	0	0	1	W
LTI 7.1	6-May-2023	0	1	0	0	1	W
LTI 7.2	6-May-2023	0	1	0	0	1	W
LT 1.6	6-May-2023	1	1	0	0	2	SW
LT 1.7	6-May-2023	1	1	0	0	2	SW
LT 1.5	5-May-2023	1	0	0	0	1	S
LT 1	30-Mar-2023	1	0	0	0	1	S
LT 1.3	31-Mar-2023	1	0	0	0	1	S
LT 2	31-Mar-2023	1	0	0	0	1	S
LT 3	31-Mar-2023	1	0	0	0	1	S
EB 2	31-Mar-2023	0	1	0	0	1	W
<b>Totals for California</b>		<b>13</b>	<b>23</b>	<b>3</b>	<b>0</b>	<b>39</b>	

Notes for California:

39 Samples collected from 26 Sites

LT 1.2 has lead samples from an old cable, new cable, and splice box.

**Bold line items include a lead sample.****\*Bold line items with an asterisk are potential sites for isotopic analysis.**



Figure 25. Photos. California. Lake Tahoe main telecommunications cable. LEFT: Severed cables, lead splice box on land. This photo was during a site visit with AT&T in January 2021. Top, RIGHT: Another splice location from land during the same site visit with AT&T in January 2021. RIGHT BOTTOM: Diver marking locations of damage during a survey in April/March 2022, Lake Tahoe, California.



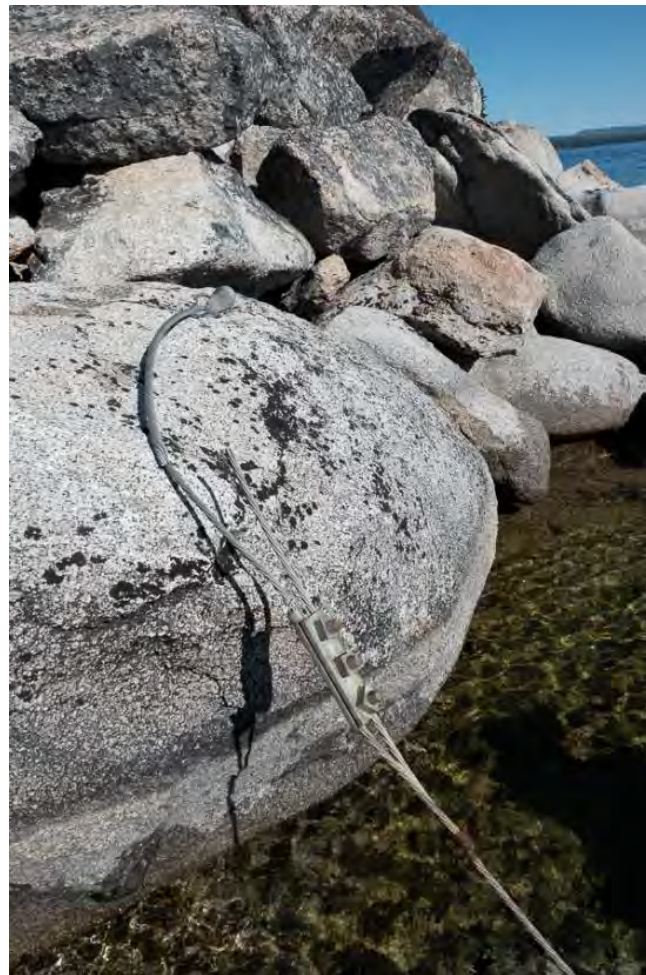


Figure 26. Photos. California continued. Cable laying among boulders on the lake bottom (Top Left). Part of a broken anchor on the cable near Rubicon (Bottom Left). Broken cable anchor on land near Rubicon (Right). All photos from survey in April/March 2022, Lake Tahoe, California.



Figure 27. Photos. California continued. Severed end of 1920's cable in Emerald Bay (Left). 1920's Cable resting on the lake bottom in Emerald Bay (Right). May 2021, Emerald Bay – Lake Tahoe, California.



## DISCUSSION

MTS completed sampling in all regions with the WSJ team. This sampling was not intended as a scientific study on the implications of abandoned cables in drinking water sources. Rather it was an initial investigation to identify the potential extent of lead containing cables within drinking water sources in multiple regions within the U.S. The regions and locations within the regions were targeted and sampled as requested by the WSJ. Where lab samples were collected, they were collected to determine the current level of lead in areas adjacent to cables; however, these data were not analyzed by MTS in a manner to determine the source of the lead.

Lead sheathed cables were found in all regions visited. The investigation was not exhaustive for water bodies in the U.S. such that it is likely that additional cables containing lead in drinking water could be identified if the investigation were expanded. Samples of the surrounding water and sediment in all regions came back with high lead numbers at some locations. Further investigations are needed to find sources of these lead hits in our drinking water and environment. Ultimately, MTS was only able to screen a small percentage of the locations provided by the Wall Street Journal as this was intended to be a preliminary study, additional funding is needed to further investigate these issues.

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**Page 3: [1] Commented [TN4] Tom Neltner 6/9/2023 8:58:00 AM**

I am not sure this captures it. The contract called for MTS to develop procedures to "Determine when and how to test water for lead to represent the potential contamination of water from the lead pipe cables." In response, MTS said it "will provide water samples to the recommended analytical laboratories to test the lead content of water bodies where cables are identified. Procedures will be include:

- Samples will be collected along a gradient relative to distance from the cable to determine if the cable or cables act as a source of lead contamination for the water body;
- Samples will be collected per agreed to procedures and in consultation with the analytical laboratory;
- Chain of custody records will be maintained for each sample;
- Samples will be provided to EDF's preferred laboratory.

After discussing the options on a call, I think EDF and MTS decided that our objective was to use sampling to determine if the lead cables may be causing water contamination. The samples would be designed to screen for lead by focusing on worst case situations rather than assess the risks. Therefore, we agreed to keep it flexible and defer to MTS' team in the field to decide what samples were needed and how they would be collected.

The next section on "Water Sample Collection Methods" reflects what the MTS actually did. I made edits to capture that.

